

Strawberry Rock Prairie Enhancement

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1. Introduction

Background and Setting

California coastal prairies/grasslands have undergone considerable acreage reduction in the era of fire suppression. The Mattole Restoration Council estimated that over one third of the prairies in the Mattole River valley have been lost since 1950 (Zuckerman 2002). Modern fire suppression and the absence of Native American burning have allowed Douglas-fir (*Pseudotsuga menziesii*) trees to expand into areas that historically were prairies.

The Bureau of Land Management (BLM) is proposing to masticate (a large grinder attached to heavy equipment) young Douglas-fir trees that continue to encroach upon the northernmost grasslands of the King Range National Conservation Area (King Range NCA), located in Humboldt County, CA. The town of Petrolia is approximately 4.5 miles northeast of the project area and the legal description of the project is T.2S, R.3W, Sections 13, 24 and 25, and T.2S, R.2W, Sections 19 and 30 (Figure 1). The project area is known as Strawberry Rock, consisting of three units totaling 700 acres.

A portion of the proposed project is located in an area that was also proposed for prescribed broadcast burning in 2006. Concerns from local citizens led the BLM to drop the prescribed fire proposal. Prescribed fire using broadcast burning techniques is not part of this proposed action.

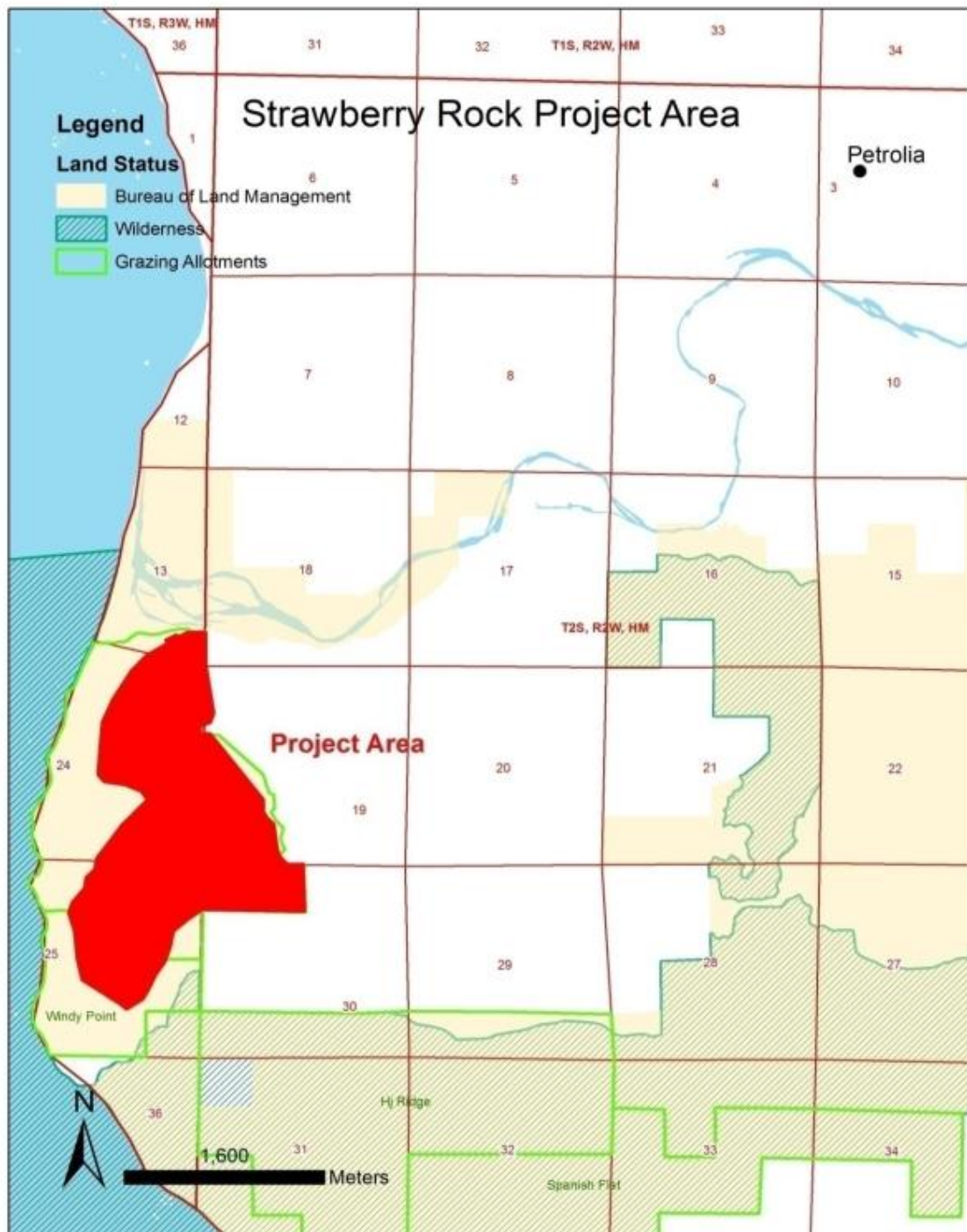
Purpose and Need for Action and Decision to be Made

The purpose for the Strawberry Rock prairie enhancement project is to masticate encroaching Douglas-firs to restore coastal prairie habitat to its historic acreage prior to the era of mechanized logging and exclusion of fire regimes in the region (approximately 1950).

The project is needed to offset the effects of Douglas-fir encroachment which is shrinking prairies and reducing the diversity of forage species available for browse of native wildlife species. The project would also offset reductions in habitat for native perennial grasses, native annual herbs, and related native pollinators.

The decision ultimately resulting from this document is whether or not to proceed with the mastication project to remove Douglas-fir trees from the project area and which method will be used to complete the project.

Figure 1. Strawberry Rock Prairie Enhancement Project



Conformance with Land Use Plan

The proposed action is consistent with the Approved King Range National Conservation Area Resource Management Plan and Final EIS (2005). Specifically, Goal TEV 1 states: "Manage vegetation types or habitats to produce and/or maintain a mosaic of compositionally and structurally diverse habitat types and plant communities that have historically occurred prior to the era of mechanized logging and exclusion of fire regimes in the region (approximately 1950)." Objective TEV 1.7 states "Maintain healthy, productive grasslands to encourage native species abundance and diversity when feasible and to meet Section 2.52 of the Rangeland Health Standards and Guidelines for California and Northwestern Nevada Final EIS (BLM 1998)." The management plan further describes using prescribed fire as a primary tool to maintain grassland habitat. Concerns from adjacent property owners in regard to prescribed fire have resulted in the use of secondary methods to maintain open prairies/grasslands.

Relationship to Statutes, Regulations or Other Plans

There are no threatened or endangered species within the project area which would require consultation under the Endangered Species Act. The King Range Wilderness Area is adjacent to the project area but will not be impacted by the proposed action.

Scoping and Issues

The project was introduced for internal scoping at a meeting on March 15th 2010. Many of the staff specialists were familiar with the project to restore the prairies. Several of the staff brought forward concerns generated during the 2006 proposal to use prescribed fire to remove the encroaching fir trees. At that time, adjacent landowners were concerned about the potential for damage resulting from an escaped prescribed burn. Broadcast burning is not currently proposed, however pile burning is included in Alternative A. Pile burning is a much less complex operation than broadcast burning.

A portion of the project area is within the coastal zone and therefore treatment needs to be consistent to the maximum extent practicable with the Coastal Zone Management Program (CCZMP).

Potential impacts on deer hunters and the safety of machine operators during hunting season was mentioned as an issue. It was suggested that project work be conducted on weekdays when hunters infrequently use the area.

Resources that may be affected include climate change, coastal zone, cultural, fire/fuels, invasive species, livestock grazing, recreation, soils/geology, terrestrial wildlife habitat/species, vegetation (including sensitive species and cryptogams), and visual.

2. Proposed Action and Alternatives

Proposed Action

The proposed action is the removal of seedling and pole-sized Douglas-fir trees through a multi-year mechanical treatment program with the use of mastication, chainsaws, and hand tools. The mortality rate of treated trees within the project area is projected to be 60-95 percent, requiring retreatment by hand tools and chainsaws every 2-5 years as needed to prevent re-invasion of the prairie. The result of the treatment would be the expansion of prairie habitat. The project would be initiated in the summer or fall of 2010.

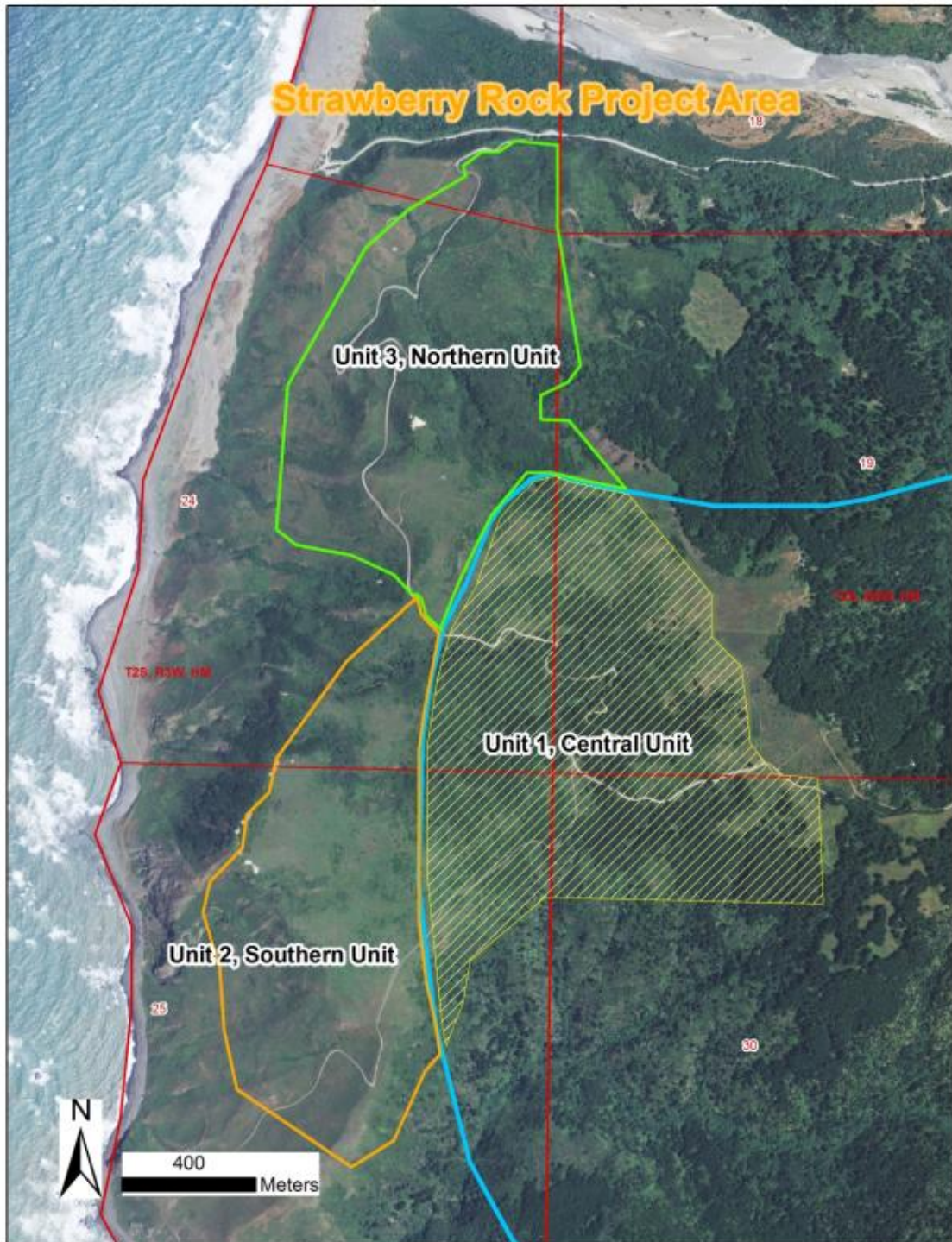
The 700-acre project area is to be divided into three units; the Central Unit, the Southern Unit, and the Northern Unit. The initial funding would be used to begin work in the 290-acre Central Unit, which is the highest priority. The Central Unit contains the lands in the center and eastern portion of the project area outside of the coastal zone. The second priority is the 200-acre Southern Unit and the lowest priority is the 210-acre Northern Unit. Dividing the project into units will allow for the prioritization of work as funding becomes available. Figure 2 illustrates the unit boundaries.

The effectiveness of the treatments would be monitored to determine soil impacts, mortality rates, costs, and effects on plant composition. Monitoring would occur after the first wet season post treatment. If the monitoring data suggests the project is producing satisfactory results, then the project would continue as funding becomes available. If the data suggests the project is not satisfactory in one or more areas (soil impacts, non-native plants, etc.), methods may be altered including types of machinery used, machinery sanitation regimen, and depth of wood chips.

To implement treatments, an excavator equipped with a masticator head would be deployed to shred standing trees in the project area. Trees up to 12" in diameter breast height (dbh) would be removed. An excavator is favored over a skid-steer due to the excavator's ability to rotate the mastication head 360° resulting in less soil impact. Skid steers must move backward and forward repeatedly to move into position to masticate each tree. Seedling size trees would be removed with chainsaws or hand tools during follow-up treatments. Follow-up treatment may also be necessary on masticated trees as the mastication process may leave the lowest rings of branches uncut. Materials resulting from the mastication process (shredded chips and small tree limbs) would be left in place unless large areas of chips exceed 4 inches in depth. Large areas of deep chips would be spread on the site to the desired depth.

Approximately 95 percent of the young trees within the dense fir stands and open grassy areas for any given treatment unit would be masticated to small chips. Eighty-two acres are riparian areas or hillsides with steep slopes (greater than 30

Figure 2. Boundaries of Central, Southern, and Northern Units. The area west of the blue line is in the Coastal Zone.



percent) and would not be treated to protect water quality and provide cover for wildlife (Figure 3).

The specifications identified below would be applied to the project to protect water quality and soils, and to provide wildlife cover habitat.

Design Features

1. All equipment operations will cease if soil moisture results in visible rutting or spinning tires on wet ground, or if operations result in a visible increase in turbidity within any receiving watercourses.
2. Equipment operations may resume when soil conditions are sufficiently dry such that rutting, tire spinning and turbid runoff is not occurring.
3. Equipment will avoid operating on slopes greater than 30 percent or areas with evidence of recent instability.
4. The BLM representative (Contracting Officer Representative/Project Inspector) overseeing the project will make the determination to halt equipment operations or avoid areas based on on-site observations of soil conditions. Evidence of recent instability includes, but is not limited to, slumping ground, tension cracks, bare scarps, and tilted trees.
5. All heavy equipment and vehicles contracted to conduct project activities will be inspected and cleaned of any reproductive plant parts prior to entry on BLM lands. Operators shall be informed of invasive, non-native plants in the project area so as not to contribute to their spread through any associated project actions.
6. Operators will route chips and other vegetative debris away from the road surface and avoid build up of material in and adjacent to inboard ditches and culverts.
7. Heavy equipment operations will use all feasible techniques to prevent any sediment from entering a drainage system during operations.
8. Heavy equipment will be inspected daily for leaks, frayed hoses, or loose hydraulic connectors. Equipment that may leak lubricants or fuels shall not be used until leaks are repaired. Re-fueling will be done outside of Riparian Reserves and stream crossings.
9. Wheeled or track-laying equipment will not be operated in streamcourses, unless designated by the BLM.

Figure 3. Exclusion areas protect water and soil quality, and to provide wildlife cover habitat totaling approximately 82 acres.



10. This project may occur during the breeding season for migratory bird and upland game birds such as California quail and ruffed grouse. Should work begin prior to July 1, all areas of the project will be surveyed for nesting birds. If an active nest is located in the area, a 20 meter radius area around the nest would be flagged off and no trees will be removed until the nestlings have fledged.
11. The project area is a popular hunting area for deer and upland game birds. To protect recreation opportunities, no operations will take place on Saturdays, Sundays, and major holidays (Labor Day) during the deer hunting seasons, as defined by CA Department of Fish and Game. The hunting season typically runs from the 3rd weekend in July through the last weekend in September. Work may occur on weekends during the upland bird seasons. In addition, signs will be posted adjacent to Prosper Ridge Road and Windy Point Road to inform deer hunters that equipment operators may be working nearby.
12. Chips will be piled to a desired depth of not more than 2 inches with a maximum depth of 4 inches. Chips over 4 inches deep in an area over 100 square feet will be spread with equipment or manually to less than a 4 inch depth.

Alternatives

A. Manual Tree Cutting and Pile Burning.

Approximately 95 percent of the young Douglas-fir trees (less than 12" dbh) within dense fir stands and open grassy areas would be cut down with chainsaws and hand tools. Trees would be piled to dry and then burned at a later date (at least 20 days after being cut down). The resulting burn piles' "footprints" would affect approximately 3 percent of the total treatment area. This alternative would allow for pile burning under a cool and moist weather prescription. Retreatment using chainsaws and hand tools would be needed every 2-5 years.

The effectiveness of the treatments would be monitored to determine soil impacts at burn pile locations, mortality rates, costs, and effects to plant composition. Monitoring would occur after the first wet season post treatment. If the monitoring data suggests the project is producing satisfactory results, then the project would continue as funding becomes available. If the data suggests the project is not satisfactory in one or more areas (soil impacts, non-native plants, etc.) methods may be altered.

B. No Action

Mastication or manual cutting and pile burning would not be authorized and no work would occur. The Douglas-fir trees would be allowed to continue to grow and expand into the prairies.

3. Affected Environment

General Setting

Air Quality

The air quality in the area is very good to excellent. The location of the project area subjects the area to the prevailing northwest winds.

Climate Change

Greenhouse gases and carbon dioxide emissions have been addressed in accordance with Order Number 3226, Amendment No. 1, dated January 16, 2009, by the Secretary of the Interior. The BLM Arcata Field Office has addressed actions that may contribute to greenhouse gases and provide analysis and quantification of carbon dioxide emissions where possible.

Coastal Zone

Approximately one-half the project area is within the coastal zone (Figure 4). Relevant policies of the CCMP involve Article 2. Public Access, Article 3. Recreation, and Article 5. Land Resources. The BLM, in accordance with the Federal Coastal Zone Management Act of 1972 must evaluate the project's consistency with the Coastal Zone Management Act of 1972 and the California Coastal Act of 1976. Relevant policies in the California Coastal Act that are analyzed in this environmental assessment (EA) include Article 2. Public Access, Article 3. Recreation, and Article 5. Land Resources.

Cultural Resources and Native American Consultation

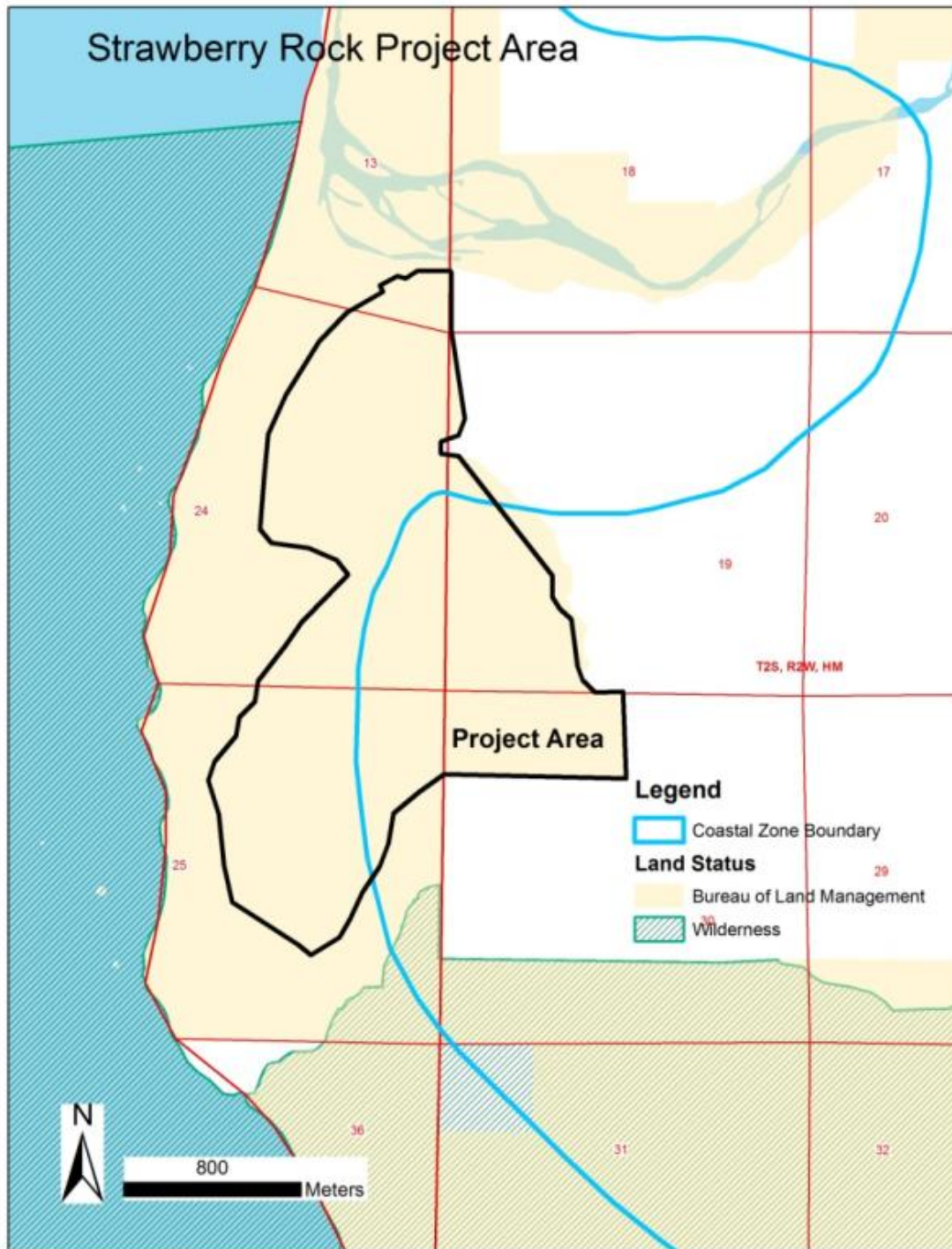
The project area has been extensively surveyed by qualified archaeologists and no historic, ethnographic, prehistoric sites or materials were located. Pre-field examination of literature and consultation with the Bear River Band of Rohnerville Rancheria has not identified any sacred sites or traditional gathering areas within the Area of Potential Effect (APE) of the proposed project.

Fire/Fuels

Modern fire suppression and the absence of Native American burning have allowed Douglas-fir trees to expand into areas that historically were prairies, allowing for potential crown fire activity and increased spotting distances. An emerging wildfire incident in these fuels conditions can be very resistant to control.

The area was historically coastal prairie grassland that has been invaded by low-growing, multi-stemmed fir trees. Field notes from an early survey describe the transect running through the middle of the project area as "rolling 1st rate prairie" (J.S. Murray, US Surveyor-General's Office, September 6, 1860). Surveyors note constructing mounds for orientation purposes due to the absence of trees along this transect. A follow-up survey conducted in 1877 notes the loss of a bearing tree from fire 2 miles southeast of the project area in Four Mile Creek. In addition, the

Figure 4. Coastal Zone Boundary. The area west of the blue line is in the Coastal Zone.



community-developed Lower Mattole Fire Plan states “It is generally accepted that the original inhabitants of north coastal California extensively managed their lands, with practices that included setting fires.” These frequent, low intensity burns helped keep pest populations down, improved the growth and yield of acorns and other desirable non-timber forest products, and improved hunting grounds. It is assumed that Native American burning occurred on this landscape for several thousand years prior to European settlement.” (LMFP, Chapter 2, pg. 2). Neighboring landowners have indicated reluctance to approve broadcast burning to re-establish pre-European fire regimes. Mechanical treatment is a viable option to maintain the coastal prairie habitat.

Invasive, Non-native Species

Invasive species that are found within the project site include French broom, (*Genista monspessulana*), tansy ragwort, (*Senecio jacobaeae*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), and naturalized invasive annual grasses. The French broom has been manually treated for 8 consecutive years and continued seed bank depletion is a management goal. The area infested by French broom is approximately ¼ acre in size.

Tansy ragwort was detected 5 years ago in the upper portions of the project area at Barksdale Table and on adjacent private lands to the east. Since initial mapping in 2007, outlier infestations have been located and manually treated. Tansy ragwort is highly toxic to cattle and horses causing irreversible liver damage. It is primarily spread through wind dispersed seeds; however, it can reproduce by broken root fragments. Tansy ragwort easily out-competes native and naturalized grasses and forbs. Hand pulling has been the most common technique used for removal in pastures in early phases of infestations. Soil moisture is critical, as drier soils allow root breakage and pulling in wet soils removes large soil clumps. Pulled plants must be buried deeply or burned. Prescribed burning is traditionally used in agricultural croplands as a pre-emergence weed treatment. In ragwort control, there were several control burns conducted in 1982 at an infested site in Redwood National Park, California, but the results were inconclusive. (Bossard et al, 2000)

Bull and Canada thistles are not common within the project area and are distributed as scattered small clusters or individuals.

Livestock Grazing

The project area overlaps with the Strawberry Rock and Windy Point grazing allotments. Livestock grazing on the Strawberry Rock grazing allotment occurs from September 15 through about May 20 (target date is the weekend before Memorial Day weekend). The lease authorizes 37 cattle (cow/calf) pairs at a level of 296 animal unit months (AUMs). Distribution and rotation of livestock throughout the allotment is managed on a regular basis by the lessee who lives on the adjacent private property. Functional fencing exists to secure the outer boundary of the entire allotment, and also the holding pasture near the corrals and barn. Other fences are incomplete, and generally remain to provide vehicle barriers. Livestock

grazing on the Windy Point grazing allotment occurs from September 15 to about May 20th as well. The lease authorizes 10 cattle (cow/calf) pairs at a level of 85 AUMs.

Recreation

Recreation uses in the vicinity of the project area are primarily associated with hunting, picnicking, wild strawberry picking, paragliding, and sightseeing along Prosper Ridge Road. Estimated annual visitor use for hunting is approximately 500 visits, and for sightseeing, 200 visits. A relatively small number of visitors use the road to access Windy Point Road and hike south to the Lost Coast Trail.

Soils

In general, the soils of Strawberry Rock are composed of fractured sandstones and shale typical of coastal belt Franciscan marine sediments. Younger marine terraces cap portions of the coastal bedrock outcrops. Most recently, a 1984 soil classification for the west slope of the King Range NCA was completed and described the soils of this area as composed predominately of the Bruhel series which are very deep and well drained. They are formed in residuum and colluvium from sedimentary rock. The Bruhel soils are on level and gently sloping marine terraces and have slopes of 0-50 percent. The annual precipitation is about 100 inches and annual air temperature is about 52 degrees F.

The taxonomic class is defined locally as fine, mixed, isomesic pachic argiustolls. Typically, the surface layer is very dark brown silt loam with a pH of slightly acid to neutral. The soils tend to be soft, friable, and slightly sticky, with many very fine to fine and common medium roots with 5 percent gravel. This condition goes to a depth of about 60 inches. Often the fractured sandstone lithic contact is beyond the 60 inch depth.

Permeability of the Bruhel soil is moderate. Available water capacity is high. Effective rooting depth is 60 or more inches. Runoff is slight to medium and the hazard of water erosion is high under bare soil conditions.

The productive upland soils are capable of year round use if proper management practices are utilized. Management should be aimed at keeping a good vegetative cover on the land to prevent soil erosion and water loss.

In May of 2004, six soil samples were collected from the Strawberry Rock project area and sent to the Soil and Plant Laboratory, Inc. in Santa Clara, California and tested for fertility limiting factors. The pH range was found to be acidic, between pH4.8 to pH5.3. Salinity, sodium and boron were safely low in all samples and the sodium absorption ratio values indicated that calcium and magnesium adequately balance soluble sodium throughout. Nutritional data revealed deficient nitrogen and phosphorus in all samples; with one sample being low in potassium as well. Calcium levels were fair, with magnesium sufficient. For establishment of new grasses, the

standing recommendation is to insure adequate nitrogen, phosphorus and potassium are available for healthy root development.

The subject grasslands are on acidic soils. Natural coastal prairies can and do occur on acidic soils. A University of California Berkeley document posted to the web in 1994 entitled Plant Communities of California, defined Northern Coastal prairies as occurring from Monterey Bay to southwest Oregon; near sea level to 5,000 feet, maritime; fog and strong winds may be present; soils not very saline; slightly acid; good agricultural soils, high species diversity, fire adapted; and that fire suppression is not a good influence. Further, it is commonly known that high rainfall rates, such as experienced in the King Range NCA move soils in an acidic direction regardless of the vegetative cover.

Terrestrial Wildlife including Threatened and Endangered Species

The close proximity of many habitat types provide habitat for a wide variety of terrestrial wildlife species. Forested areas can be found in ravines and along Four Mile Creek at the southern edge. The prairies are bounded by dunes and beaches to the west and the Mattole River floodplain to the north. Several seeps, ponds, and water developments are also present.

The prairies in the project area provide habitat for a variety of terrestrial species including herpetofauna such as red-legged frog (*Rana aurora*), western fence lizard (*Sceloporus occidentalis*), and northern Pacific rattlesnake (*Crotalus oreganus*). Representative birds include western meadow lark (*Sturnella neglecta*), American kestrel (*Falco sparverius*), peregrine falcon (*Falco peregrinus*) and many species of songbird. Examples of mammals that use the project area include black-tailed jack rabbit (*Lepus californicus*), black-tailed deer (*Odocoileus hemionus*), California vole (*Scapanus spp.*), and coyote (*Canis latrans*).

Vegetation

The project area consists of California coastal prairie grass and forb species that are being displaced by encroaching Douglas-fir trees. Coastal grassland systems are not considered static ecosystems and it has been long known that without disturbance, in the form of fire, a shift from grasslands to shrubs and trees occurs. Given enough time, this transition can go all the way to forest. In the proposed action, the Douglas-fir trees that are encroaching are displaying 'Krumholtz'-like characteristics; that is, structural features typically seen in alpine or tundra habitats having been exposed to chronic high velocity winds. These high winds cause the trees to have multiple stems instead of one, their stature to become dwarfed, and their branches to exhibit flagging away from the direction of the predominate winds.

Sawyer and Keeler-Wolf describes this area as coastal terrace prairie consisting of a mosaic of California oatgrass series and Pacific reedgrass series that often mix with tree series at a coarser scale (Douglas-fir). Typical species found in these types, that are also found within the project area include bracken (*Pteridium aquilinum*), California oatgrass (*Danthonia californica*), Douglas-fir (*Pseudotsuga menziesii*),

Pacific reedgrass (*Calamagrostis nutkaensis*), tall-oatgrass (*Arrhenatherum elatius*), velvet grass (*Holcus lanatus*), vernal grass (*Anthonxanthum odoratum*), coyote brush (*Baccharis pilularis*), salal (*Gaultheria shallon*), and California blackberry (*Rubus ursinus*). The Nature Conservancy Global Heritage Program has listed the California Oatgrass and Pacific Reedgrass series' within coastal prairies, bluffs, terraces, wetlands and coastal uplands of all types as threatened in California.

There are many remnant native perennial grass colonies that have been identified including California oatgrass (*Danthonia californica*), California mountain brome (*Bromus carinatus*), prairie junegrass, (*Koeleria macrantha*), and tall trisetum (*Trisetum canescens*). Typical non-native annual grasses include velvet grass (*Holcus lanatus*) and dogtail (*Cynosurus echinatus*). Common forbs representative of the site include strawberry (*Fragaria chiloensis*), wild cucumber (*Marah oreganus*), bracken fern (*Pteridium aquilinum*), self heal (*Prunella vulgaris ssp. lanceolata*), western dog violet (*Viola adunca*), and yarrow (*Achillea millifolium*). Typical encroaching shrubs and stunted small trees include coyote brush (*Baccharis pilularis*) and Douglas-fir.

Annual species of grasses and flowering plants are threats to grasslands that are, to some extent, more controllable through low cost management methods. The original invaders of California native prairies, annual grasses are well known to out-compete native grasses and forbs. Of equal importance is their tendency to produce large amounts of above-ground biomass that forms a thick thatch inhibiting growth and germination of native species.

Visual Resources

The project area is located in an area with moderate to high scenic qualities and is within the Frontcountry Zone as described in the 2005 King Range Resource Management Plan. Management activities and uses within this zone should generally retain the landscape's existing character although moderate changes may be acceptable in the short term. Management activities should not dominate the view of the casual observer in the long term.

4. Environmental Effects – Direct, Indirect and Cumulative

This section discusses the resources that may be impacted by the proposed action or alternatives. Resources that are not impacted or are not present are not discussed further.

Proposed Action

Air Quality

The project would generate minor increases in dust and vehicle emissions during project implementation. These emissions are expected to dissipate quickly given regular coastal winds.

Climate Change

The use of a diesel engine excavator to masticate Douglas-fir trees will generate carbon dioxide emissions as well as dust when the excavator moves around the site.

It is estimated that treatment of the whole project area, at a rate of one acre per hour, would take 500-700 hours of masticator use (Halbrook et al. 2006.). According to a local professional heavy equipment operator, running a large piece of heavy equipment uses about 35 gallons of diesel per eight-hour work day (McCollough, 2010).

With diesel fuel creating 22.2 lbs of carbon dioxide (CO₂) per gallon of fuel combusted, there would be a minimum of about 62,160 lbs of CO₂ produced from the operation of the heavy equipment if the entire project area was treated; plus heavy equipment mobilization and demobilization additions, and emissions from the daily commuting of the operator.

This project would contribute to carbon dioxide emissions that have been connected by the scientific community to be responsible for global warming and associated climate change. However, perennial grasslands are quite effective at capturing carbon and storing it indefinitely in the soil. Perennial grasslands are extremely productive and exceed the carbon sequestration of trees and woody shrubs. A study from Jackson et al. of Duke University reveals that untilled perennial grasslands are better at capturing and storing carbon than trees and shrubs. Grasses store vast amounts of carbon in their underground root mass. However, once the grasses die the soil continues to function as the carbon sink. Carbon stored in soil can remain in the soil for centuries. Furthermore, the global soil carbon pool is twice as large as the plant pool (Jackson et al. 2002). It is anticipated that the conservation of perennial grasslands would help offset the contribution of CO₂.

Coastal Zone

Public access would continue to be allowed throughout the project area. Signs would be posted as a precautionary measure to inform visitors about the work and to avoid coming close to the excavator while in use. Recreation issues are discussed in the recreation section. Land resource issues are discussed in the soils, livestock

grazing, terrestrial wildlife including T&E species, vegetation, invasive non-native species, and cultural resource sections.

Cultural Resources

The project would have no effect on properties which may be eligible for the National Register of Historic Places.

Fire/Fuels

Maintaining grass fuels, rather than timber fuels, would allow for a potentially faster moving fire under stronger wind conditions, but potential flame lengths and spotting distances would be considerably less. The proposed action would produce fuels conditions conducive to easier, less complex, and safer wildfire suppression operations and control.

Invasive, Non-native Species

French broom, tansy ragwort, and various thistles may be inadvertently spread or provide an opportunity to germinate in a new area as a result of this project. However, the project area has been manually treated for French broom and tansy ragwort for several years. A flush of the seed bank, and subsequent manual removal, would actually be a positive event in the ongoing eradication effort of these plants.

Livestock Grazing

The proposed action is not likely to result in a noticeable change to grazing patterns. Currently, cattle lightly graze in encroached areas because the trees create physical barriers and also shade out the grasses, decreasing quantity and quality of available forage. Following treatment, there may be areas of wood chips or shredded wood generated during the mastication process that may suppress native grass and forb re-growth for as long as it takes for those chips to decompose. Fertility for grass growth and forage production may also be affected by the breakdown of the woody material. This is expected to be a short-term effect and would be restored by animal deposits of nitrogen rich waste products and nutrient cycling by leguminous forbs in the ecosystem. Conservation of the at-risk prairies is expected to be a longer term benefit of the proposed action.

Recreation

Hunting opportunities would improve after project completion because of the increased visibility. Number of deer per acre may also increase due to better forage, thus increasing the likelihood of hunting success. During the work periods when the excavator is operating, hunting success would likely be diminished due to increased noise. The deer would likely move to more remote areas. Other recreation users such as berry pickers and paragliders would not be affected. Sightseers would be negatively impacted in the short term because of some dead tree limbs and abundance of chips in view from the roads. Within a couple of years the grass and shrubs would grow and obscure nearly all of the masticated vegetation. Soils
The project would involve the use of heavy equipment operating throughout the project area. Project operations are not likely to result in long-term damage to soils

or initiate erosion because much of the area is flat to gently sloping marine terraces. Limiting equipment operations to the summer and fall dry season would avoid rutting and development of channelized pathways for overland flow. Short-term exposure of the upper-most soil layers may occur, particularly where equipment use is concentrated, but these superficial disturbances would quickly re-vegetate.

Terrestrial Wildlife Including T&E Species

Negative impacts to the treatment area could result from increased human presence and mechanical equipment use during treatment in the form of disturbance to deer using coastal prairies. These impacts are expected to be minimal and related to human presence, disturbance by equipment, and crew activities.

Because this action is proposed during the neo-tropical migrant breeding season, there may be possible negative impacts anticipated from treatment activities. Nest searches will identify exclusion areas with active nests which may be treated after the nestlings have fledged. Mortality of encroaching conifers and restoration of grassland habitat in years following the initial treatment are likely to bring about moderate beneficial results to local bird species dependent on grassland habitats. This impact would be realized in the form of increased habitat suitability for grassland species.

The proposed action area is within critical habitat for northern spotted owl (*Strix occidentalis caurina*, Critical Habitat Unit CA-50) and marbled murrelet (*Brachyramphus marmoratus*, Critical Habitat Unit CA-05-a). The project area does not contain suitable habitat for either species and the nearest stand of suitable habitat occurs more than one and a half miles southeast of the project site. No marbled murrelets or northern spotted owls have been detected within one mile of the project area. This action is expected to have no effect on northern spotted owls, marbled murrelets or their respective critical habitat.

Vegetation

The proposed action would lead to recovery of coastal prairie vegetation that would persist as long as active management was taken to continue Douglas-fir encroachment management. Ideally, natural fire would be the observed course of maintenance that would serve the prairie ecosystem and its inhabitants. In the absence of natural fire, or even prescribed fire, mechanical and manual methods remain as the only method of slowing down the conversion until such time as natural and cultural fire regimes could theoretically be restored.

Though Douglas-fir trees, and native shrubs such as coyote brush are widely distributed native species, for the purposes of this project they are essentially non-desirable native species leading to the conversion of coastal prairies. The goal of the project is to remove as many of the Douglas-fir trees from the prairies as possible.

Visual Resources

The BLM's visual resources contrast rating system was utilized in assessing the visual impact of the proposed project. Most visitor use occurs along the Lost Coast

Trail and Mattole Campground, with a smaller amount of visitor and residential use occurring along Prosper Ridge Road and Windy Point Road. Because the project area cannot be seen from either the Lost Coast Trail or Mattole Campground, these two locations were excluded from further visual impact analysis. The proposed project would, however, be seen from Prosper Ridge Road and Windy Point Road so BLM's contrast rating worksheet was utilized in reference to these two roads where visitors are most likely to see the resulting impacts.

The proposed project would create short-term contrasts in color (from green to brown) as a result of trees being masticated with dead limbs and chips lying on the ground. The mosaic of vegetation would be changed, and a moderate change in texture would occur. The visual contrast was quantified with a rating score of "15", which is defined as "attracts attention and begins to dominate".

The 2005 King Range RMP identified this area to be managed under Visual Resource Class 2 for the long-term and Class 3 for the short-term. The objective of Class 2 is to retain the landscape's existing character. Management activities can be seen, but should not attract the attention of the casual observer. The objective of Class 3 is to partially retain the landscape's character. The level of change can be moderate, and may attract attention. The proposed project would be consistent with this management prescription. Short-term impacts would meet Class 3 objectives, while long-term impacts would be reduced to Class 2 levels as the dead tree limbs and chips decompose and are no longer visible from the roads. The project would improve the vistas of the open coastal prairies of the northern King Range NCA, which have been identified as important visual resources in the Resource management Plan (RMP).

Alternative A - Treat Project Area with Chainsaws and Pile Burning

Air Quality

Although burning would only take place on permissive burn days, as determined by the North Coast Unified Air Quality Management District or with a variance granted by the District, total emissions would be greater than the proposed action. The combustion and smoldering phases of smoke emission would be increased both in total amount of material burned and over a greater period of time. Pile burning would occur over approximately ten days. Residual smoke would be greatly increased as smoldering would continue over nighttime hours. Due to air quality regulations, swamper burning (piling and burning vegetation as it is cut) would not be allowed. Impacts to air quality resulting from the use of chainsaws would be similar to that resulting from the use of an excavator. Instead of single large engine such as the excavator, there would be multiple small engines running simultaneously.

Climate Change

It is uncertain whether Alternative A would lead to more or less CO₂ produced than the proposed action. Manual treatment with chainsaws would require large work crews, a greater investment in labor hours and treatment days, and more miles commuting to the project site from an unknown starting point. Manual treatment of conifers occurred at Strawberry Rock years ago at a rate of about 5 acres in 8 work days with a crew of ten commuting from Fortuna daily. At this rate, the entire treatment area would take 63 months of steady work by a crew of ten laborers, as opposed to 80 days with an excavator/masticator. Alternative A would likely use more fuel than the proposed action if the whole area was treated. If it took 20 gallons round trip for a passenger van to haul workers to the site, and that was done every work day for over five years, it would use over twice as much fuel as the excavator/masticator alternative.

Coastal Zone

Public access would be restricted during the 10-day pile burning operation. For additional impacts on coastal resources, refer to the other resource sections related to recreation and various land resources following the proposed action.

Cultural Resources

The project would have no effect on properties which may be eligible for the National Register of Historic Places.

Fire/Fuels

The reduced threat of high intensity summertime wildfire and associated economic/property impacts to surrounding private land residences would be the same as the proposed action. The time period for re-treatment would be about the same as the proposed action.

Invasive, Non-native Species

Sterilized soils beneath the burn pile locations, due to greater heat retention time, would increase the potential for invasive species establishment. The nearby infestations of tansy ragwort pose some threat of spread under all alternatives. However, due to the expected extended length of time of bare soil in 3 percent of the treatment area, there is more opportunity for invasive weed seeds to occur in these niches and germinate. Flower heads average 55 achenes, giving an approximate range of 50,000 to 150,000 achenes per plant. (Poole 1940). After pollination, the achenes ripen in about 7 to 10 days. Achenes produced on the lower branches are on average heavier and have higher germination rates than those produced on the tops. However, wind dissemination is not as effective as is popularly supposed. A heavy infestation of ragwort spreads mainly in the direction of the prevailing wind and then largely by marginal spread. The vast majority of seed is deposited within 10 m of the original infestation (Poole 1940). The germination rate is 50 to 86 percent under suitable conditions. Onshore winds occur frequently and could spread the tansy seed in a westerly direction toward the heart of the treatment area. Follow up inspection and hand removal would need to be implemented under any alternative. Although equipment would be inspected before operations begin, there

is still a slight potential for invasive species to arrive on site via chainsaw equipment.

Livestock Grazing

Alternative A is not likely to result in a noticeable change to grazing patterns. Currently, cattle lightly graze in encroached areas because the trees create physical barriers and also shade out the grasses, decreasing quantity and quality of available forage. Alternative A would not have the short-term decrease in soil fertility supporting grass recovery because mulch would not be produced and spread as controlled trees would be pile-burned instead.

Recreation

The use of chainsaws, estimated to continue for 1 month, would increase noise levels much more than what would occur under the proposed action, thus resulting in even lower hunting success. Increased noise disturbance to all other visitors and nearby residents would occur. Pile burning operations, spread out over approximately 10 days, would negatively impact recreation use activities because areas nearby the burn sites would be closed to public use.

Soils

Under Alternative A there would not be an increase in soil erosion, although there could be some minor spot soil movement at the burn pile sites. Remaining standing grass and vegetation would effectively stabilize any soils made mobile by wind or rain forces since the soil in the burn pile areas would likely be exposed for a longer period of time. Soils would likely not suffer from compaction as a result of crews working in the area. The soil in the project area is described as a silty loam and is born of weathered sandstone. Clay content and compaction issues are not described as characteristics of these soils. However, over the short term, the effects of repeated walking and working could increase overland flow of water and decrease the rate of infiltration.

Terrestrial Species including T&E Species

This alternative would have similar long-term benefits to native wildlife by expanding and maintaining healthy prairies. Some differences would occur when compared to the proposed action. Game birds often utilize brush piles such as those that would be created under this alternative for cover and nesting. This benefit would be short term as the piles would be burned. There would be less benefit for deer as dense brush piles may become obstacles to movement. Understory forage in areas where trees are felled would also be temporarily unavailable until the slash is piled.

Vegetation

Like the proposed action, Alternative A would lead to recovery of coastal prairie vegetation that would persist as long as active management was taken to continue Douglas-fir encroachment. Ideally, natural fire would be the course of maintenance that would serve the prairie ecosystem and its inhabitants. In the absence of natural

fire, or even prescribed fire, mechanical and manual methods remain as the only method of slowing down the conversion until such time as natural and cultural fire regimes could theoretically be restored.

Though Douglas-fir trees, and native shrubs such as coyote brush, are widely distributed native species, for the purposes of this project they are essentially non-desirable native species leading to the conversion of coastal prairies. The goal of the project is to remove as many of the Douglas-fir trees from the prairies as possible.

Further, due to the significantly increased heat retention time to soils at burn pile locations (approximately 3 percent of the treatment area), perennial bunch grasses and native seed banks could be spot-killed. Annual grasses and invasive species could have a greater potential for establishment. However, this presents an opportunity to reseed or plant local native perennial grass plugs in burn pile sites where native flora does not recover.

Visual Resources

With increased heat retention time to soils at burn pile locations, the area may develop a spotted appearance for several years following treatment due to differing plant species establishment. This effect could be dispersed through the project area by building smaller piles. Some pole-sized round wood would be visible at burn pile locations due to incomplete combustion. This effect could be reduced through intensive pile management during burning operations; however, charcoal would remain visible for up to 2 years following treatment.

Alternative B - No Action

Air Quality

There would be no impact to air quality under the no action alternative.

Climate Change

There would be no detectable impact to factors contributing to climate change under the no action alternative.

Coastal Zone

Douglas-fir trees would continue to grow, reducing scenic views of the coastline. Other coastal resources would not be affected.

Cultural Resources

There would be no impacts to cultural resources under the no action alternative.

Fire/Fuels

There would be no reduction to the threat of high intensity wildfire and associated economic/property impacts to surrounding private land. Fuel loading would continue to increase and wildfires would become more resistant to control. Restoration to coastal prairie would be dependent upon high-intensity, summertime wildfires.

Invasive, Non-native Species

The spread of invasive weed spread in the project area would likely not change dramatically under the no action alternative.

Livestock Grazing

Under the no action alternative, the grasslands providing suitable forage to livestock grazing would continue to diminish in distribution. Grasslands in the region have declined over 30 percent in the past 50 years due to fire suppression. This continues to be an economic threat to the vigor of livestock grazing.

Recreation

Hunting opportunities would slowly decline as the open prairie landscape transformed into a closed forest. Visibility and deer populations would continue to decline. Sightseeing opportunities would slowly change from viewing a relatively open prairie to viewing a stunted forest.

Soils

There would be no impact to soils under the no action alternative. Soils would remain as described in the affected resource section of this environmental assessment.

Terrestrial Species including T&E Species

Barring a future wildfire event, this alternative would allow the remaining coastal grassland habitat to eventually convert entirely to Douglas-fir habitat. This alternative would result in severe negative impacts to coastal grassland-dependent species for the foreseeable future.

Vegetation

Under the no action alternative, a mono-culture of poorly developed Douglas-fir trees lacking a diverse understory would continue to encroach upon coastal prairies. This rate may be greater than over the past 50 years due to the increasing edge effect created by the encroachment. Prairie vegetation would continue to decline, including California oatgrass and Pacific Reedgrass series' as well as their associated species.

Visual Resources

The landscape would eventually change from an open prairie setting to a closed, stunted forest. Distant views of the ocean and varied landscapes would eventually disappear.

Cumulative Effects

Cumulative effects are the effects of this project considered in the context of other past, present, or reasonably foreseeable future projects in the assessment area, regardless of who is implementing the other projects. There are no other known similar projects in the Mattole watershed, King Range NCA, or southern Humboldt coastline and thus no cumulative effects.

5.0 Tribes, Individuals, Organizations and Agencies Consulted

1. The following persons, organizations, and agencies were consulted during preparation of this analysis. Inclusion of an organization or individual's name below should not be interpreted as their endorsement of the analysis or conclusions.

Bear River Band of the Rohnerville
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